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14. ABSTRACT Poor decisions by the JFC regarding command relationships and synchronization procedures will inhibit effective employment of operational fires given the compressed time, greater mobility, and enhanced lethality of twenty-first century warfare. The trend toward a smaller force structure, diminished acceptance of collateral damage and increased involvement by political leaders makes the modern battlefield less forgiving to errors in command relationships, apportionment, targeting, and fire support coordination. Operation Desert Storm (ODS) proves that improper command relationships, incorrect apportionment, absence of a JTCB, and poor placement of the FSCL will prevent accomplishing the desired end state even with a harmonious Operational Design. Operation Allied Force (OAF) demonstrates that success is elusive and operational fires are ineffective with incoherent national policy objectives, poor COG analysis, unsuitable command relationships, fruitless apportionment, and a nonexistent JTCB. This analysis suggests that U.S. Joint Doctrine should mandate that JFCs construct a coherent Operational Design, designate component commanders, and use appropriate synchronization procedures to effectively employ operational fires for any campaign or major operation.					
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NAVAL WAR COLLEGE
Newport, R.I.

The Joint Force Commander's Role In Synchronizing Operational Fires

by

George D. Kramlinger

Lt Col, USAF

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or Department of the Navy.

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INTRODUCTION

National policy objectives should clearly define decisive and attainable goals toward which every military action should be directed if force is required.ⁱ The sources of power that provide an adversary with its freedom of action, physical strength, or will to fight will present formidable obstacles to achieving national policy objectives. The essence of operational art and the most direct path to military victory lies in identifying and then massing effects, directly or indirectly, to destroy or neutralize, these enemy centers of gravity (COGs) while protecting one's own.ⁱⁱ The key to attacking protected enemy COGs is to designate the most important decisive points as theater military objectives then control, destroy, or neutralize them.ⁱⁱⁱ Since COGs and associated decisive points can exist at both the strategic and operational levels of war, the Joint Force Commander (JFC) should sequence and synchronize operational fires to attack both levels in parallel simultaneously.^{iv} Sound command and control (C2) assured by proper command relationships is perhaps the most important factor to properly synchronize operational fires.^v The major challenge for a JFC is to retain the degree of control necessary for synchronization yet give subordinate commanders the freedom of action necessary to accomplish their individual missions.^{vi} To this end, the JFC must construct a coherent Operational Design and then actively orchestrate synchronization through proper command relationships, a logical air apportionment decision, a joint targeting coordination board (JTCB), and placement of the fire support coordination line (FSCL) to effectively employ operational fires.^{vii} See Figure 1.^{viii}

Poor decisions by the JFC regarding command relationships and synchronization procedures will inhibit effective employment of operational fires given the compressed time, greater mobility, and enhanced lethality of twenty-first century warfare.^{ix} The trend toward a

smaller force structure, diminished acceptance of collateral damage and increased involvement by political leaders makes the modern battlefield less forgiving to errors in command relationships, apportionment, targeting, and fire support coordination. Operation Desert Storm (ODS) proves that improper command relationships, incorrect apportionment, absence of a JTCB, and poor placement of the FSCL will prevent accomplishing the desired end state even with a harmonious Operational Design. Operation Allied Force (OAF) demonstrates that success is elusive and operational fires are ineffective with incoherent national policy objectives, poor COG analysis, unsuitable command relationships, fruitless apportionment, and a nonexistent JTCB. This analysis suggests that U.S. Joint Doctrine should mandate that JFCs construct a coherent Operational Design, designate component commanders, and use appropriate synchronization procedures to effectively employ operational fires for any campaign or major operation.

OPERATION DESERT STORM

Since all information and assumptions are open to doubt, and with chance at work everywhere, the commander continually finds things that are not as he expected. ... If the mind is to emerge unscathed from this relentless struggle with the unforeseen, two qualities are indispensable: First, an intellect that even in the darkest hour, retains some glimmerings of the inner light which leads to the truth; and second, the courage to follow this faint light wherever it may lead.

Carl Von Clausewitz, On War, Book I, Chapter 3

The ODS Operational Design presented in Figure 2 shows excellent congruence between national policy objectives, centers of gravity, theater military objectives and sequencing.^x However, even the best operational design will falter if the JFC establishes command relationships that hinder synchronization of operational fires.

The ODS JFC, General H. Norman Schwarzkopf, U.S. Army, designated himself as the Joint Forces Land Component Commander (JFLCC), tightly controlled apportionment, and had no formal process to solicit and consider targeting nominations from subordinate land component field commanders. However, the air component believed, and Schwarzkopf hoped that Phase I, the “Strategic Air Campaign”, would compel Iraq to withdraw from Kuwait without a costly coalition ground offensive by using operational fires to destroy or neutralize Iraqi COGs. Yet fearful that this very result could allow a large part of the regular Iraqi army to retreat intact to fight another day, Schwarzkopf, ordered the Joint Forces Air Component Commander (JFACC), to simultaneously execute Phases I through III given the availability of over 1300 coalition attack aircraft (See Figure 2).^{xi} For the first two weeks of the campaign, the JFC directed apportionment and targeting of fielded forces with little or no regard to land component targeting requests.^{xii}

Schwarzkopf’s personality did not lend itself to soliciting input from lower echelons. Consequently, the Army and Marine Corps were forced to send their battlefield preparation target nominations direct to the JFACC without the weight of a JFLCC behind their request or a senior officer to adjudicate prioritization disagreements. Schwarzkopf often changed the geographical focus of battlefield preparation targeting well inside the air component’s planning-execution cycle.^{xiii} The result was less than efficient execution, increased risk to coalition aircrews, and operational fires directed away from land component field commander targeting requests. Army and Marine Corps field commanders believed the JFACC to be the sole source of their targeting frustration when in fact the JFC was the major cause of the problem. The JFC’s personality, constant changes, lack of a true JFLCC, and absence of a JTCB created unnecessary tension between the land and air components.

The issue for the Corps commanders was not how much of the air effort they were receiving but rather a lack of confidence that *their* priority targets would be hit according to *their* timetable to support *their* scheme of maneuver and ultimately save the lives of *their* soldiers.^{xiv} The land component was especially anxious because the JFC had directed the FSCL be set at the Saudi border to preclude coalition artillery fire from revealing the ground scheme of maneuver. The air component did not trust the intelligence cycle supporting the Army's high priority target nominations given the three day lead time for coordinating targeting nominations and building the Air Tasking Order (ATO).^{xv} Pilots often found empty desert when attempting to attack land nominated targets because of erroneous coordinates or target movement. With the JFC constantly changing the geographical focus of air attacks against entrenched Iraqi fielded forces, and the air component still responsible for successful execution, the JFACC directed airpower against battlefield preparation targets by dividing the KTO into thirty by thirty mile "kill boxes". The JFACC often directed aircraft to bomb main battle tanks (MBTs) and armored personnel carriers (APCs) as targets of opportunity rather than attempting to find the chemical capable artillery tubes and FROG surface-to-surface missile (SSM) sites in accordance with formal Army and Marine Corps requests.^{xvi} Field commanders were extremely unhappy with this arrangement because they had no input, received no battle damage assessment (BDA) feedback, and initiative for target selection rested with the individual pilot rather than the land component leadership.^{xvii}

Weather and political decisions hampered execution of Phase I making any chance of victory through airpower alone unacceptably time-consuming.^{xviii} With the ground offensive inevitable and the Iraqi air force defeated, Army and Marine Corps commanders insisted that airpower focus on preparing the battlefield for *their* scheme of maneuver.^{xix}

Under intense lobbying from the Army, the JFC agreed to the formation of a JTCCB where the Deputy JFC (DJFC) would adjudicate targeting priority disagreements between land and air. In addition, the JFC shifted apportionment of operational fires away from attacking centers of gravity and associated decisive points to almost exclusive shaping of the battlefield.^{xx}

On the eve of the ground offensive, all Iraqi conscript divisions directly opposite coalition border positions were assessed to be below fifty percent combat effectiveness in accordance with the Phase III goal. However, the Republican Guard divisions positioned in southern Iraq as the operational reserve were assessed at between fifty-seven and seventy-two percent combat effectiveness – well short of the Phase III goal.^{xxi} Despite the looming ground offensive, the JFC should have continued to execute a synchronization scheme consistent with the operational design i.e. apportionment balanced between Phase I and III. Instead, Schwarzkopf prematurely abandoned his Operational Scheme making apportionment decisions consistent with his role as JFLCC rather than JFC. Schwarzkopf lost his first opportunity to destroy the Republican Guard - Iraq's most important center of gravity.^{xxii}

Russian plans for a political bailout of the nearly beaten Iraqis forced the Bush administration to initiate the ground offensive early in the hope of preventing Baghdad from keeping the Republican Guard intact and salvaging most of its army. Otherwise, the President may have been content to let air power pound Hussein's army until it withdrew from the KTO or ceased to exist. The planned coalition ground scheme of maneuver used the Marine Expeditionary Force (MEF) as an anvil to fix the Iraqi forces on the Saudi – Kuwaiti border while VII Corps tore into the left flank and XVIII Corps raced through mostly undefended desert as a hammer in a giant “left hook”. Instead, the MEF advance

acted like a giant piston against an Iraqi army battered by five weeks of air strikes. The Iraqi army beat a hasty retreat escaping before the left hook could catch the Republican Guard.^{xxiii}

During the coalition ground offensive, operational fires were used to first impede the maneuver of second echelon heavy divisions and then pursue the routed Iraqi army once they began a general retreat. Coalition airpower caught part of the retreating Iraqi army just west of Kuwait city creating what came to be known as “The Highway of Death.”^{xxiv} The coalition ground offensive accelerated in pursuit of the retreating Iraqis, and with the intent of increasing freedom of action for attack helicopters and decreasing the possibility of friendly fire incidents from coalition aircraft, both Corps commanders extended their FSCLs well beyond normal doctrinal limits.^{xxv} However, the XVIII Airborne Corps couldn’t muster the desired helicopter attacks and the VII Corps advance bogged down. Consequently, Iraqi formations throughout the KTO were safe from air component operational fires during the final fourteen hours of the war. In the final stages of retreat, a natural choke point and sanctuary developed as the way home led all Iraqi formations through the southern Iraqi city of Basra. Bottle necked Republican Guard was safe from air attack for fear of collateral damage, incursions into Iranian airspace, and the political fallout associated with creating another “highway of death.” Schwarzkopf lost his last opportunity to destroy Iraq’s most important COG and in the process, was apparently oblivious to the FSCL placement issue.^{xxvi}

Poor command relationships leading to ineffective synchronization inhibited employment of operational fires thus preventing accomplishment of all national policy objectives. From the beginning of the campaign until just prior to initiating Phase IV, the weight of operational fires should have been apportioned to the “Strategic Air Campaign” (Phase I) to ensure the greatest destruction or neutralization of COGs including the

Republican Guard. The JFC should have designated someone else as the JFLCC and established a JTCB to achieve economy of force in preparing the battlefield.^{xxvii} Finally, the JFC should have actively monitored friendly and enemy ground positions, and if necessary, adjusted the FSCL to bring operational fires to bear in his one last opportunity to destroy the Republican Guard. General Schwarzkopf constructed an effective operational design and correctly identified the Iraqi COGs. However, the lack of a JFLCC, absence of a JTCB, and Schwarzkopf's constantly changing, micromanagement of operational fires created tremendous, albeit needless friction between the air component and Army field commanders. Schwarzkopf's ineffective command relationships and poor synchronization drove the focus of operational fires away from attacking COGs leading to the accomplishment of only one of four national policy objectives.

Operation Allied Force

The first, the supreme, the most far reaching act of judgment that the statesman and commander have is to establish by that test the kind of war on which they are embarking; neither mistaking it for, nor trying to turn it into, something that is alien to its nature. This is the first of all strategic questions and the most comprehensive.

Carl Von Clausewitz, On War, Book I, Chapter 3

General Wesley Clark, Supreme Allied Commander Europe (SACEUR), believed and in turn convinced NATO's North Atlantic Council (NAC) that two or three days of limited air strikes against no particular COG or decisive point would convince Yugoslavian President Slobodan Milosevic to accept a negotiated settlement to stop the forced expulsion of ethnic Albanians and withdraw all Serb forces from Kosovo.^{xxviii} Consequently, Operation Allied Force (OAF) began with four ambiguous NATO policy objectives, no Operational Design, and an arrogant belief among political leaders, perpetuated by SACEUR, that merely inflicting some pain would compel Milosevic to capitulate.^{xxix} After three days of bombing,

Milosevic remained intransigent and launched “Operation Horseshoe” to rid the province of all ethnic Albanians and then destroy the Kosovo Liberation Army (KLA).^{xxx} Milosevic raised the stakes thus robbing NATO of the quick victory it had counted on.^{xxxi}

With no coherent Operational Design, the unstated NATO policy objective of maintaining alliance cohesion took center stage for all decision making and planning.^{xxxii} To avoid weakening domestic support and undermining alliance cohesion, NATO avoided any target or tactic that might result in loss of an aircraft or cause collateral damage.^{xxxiii} Consequently, NATO political dynamics focused on protecting the alliance’s friendly COG by restraining military operations against the leadership elite in Belgrade. Clark correctly identified alliance cohesion as NATO’s strategic COG but his failure to properly distinguish and identify Yugoslav COGs nearly destroyed the friendly COG he tried so hard to protect.

SACEUR believed that Belgrade’s collective ground force in Kosovo was the COG rather than the leadership in Belgrade and also chose not to differentiate between the ministry of the interior special police (MUP) and Yugoslav military (VJ) 3rd Army.^{xxxiv} The tanks, armored vehicles, artillery, and mortars made the 3rd Army vulnerable to air attack but the VJ units played little role in the actual forced expulsion of civilians. The MUP on the other hand was the most numerous of the fielded force elements, skilled and efficient in forced expulsion, had assisted Milosevic in his rise to power, and had nation wide security implications.^{xxxv} NATO’s airpower only option made targeting these dispersed, concealed, elusive, and lightly armed special police units extremely difficult.

On the other hand, the Combined Air Forces Component Commander (CFACC) believed that the COG was the leadership elite and that the operation should employ a “punishment” strategy by aggressively attacking a broad range of targets thought to be of

value to Milosevic and his cronies.^{xxxvi} The CFACC believed that Milosevic had “written off” the VJ 3rd Army and that body bags from Kososvo would have little effect on Belgrade.^{xxxvii} However, political restrictions designed to hold the alliance together led to a graduated “risk” approach that failed to capitalize on airpower’s ability to destroy or neutralize entire systems of Milosevic’s power base simultaneously.^{xxxviii} See Figure 3.

With airpower as NATO’s only maneuver force, the opposing enemy force with the greatest mobility and firepower was the Federal Republic of Yugoslavia (FRY) integrated air defense system (IADS).^{xxxix} However, any discussion of the IADS as a COG is notably absent in the available literature. Although the majority of Phase I aim points were IADS targets, the limited attacks during the first three days were not part of a phased campaign to neutralize the air defense system but rather a function of which targets the NAC found politically acceptable.^{xl} When Milosevic failed to capitulate after three days, SACEUR received permission from the NAC to initiate Phase II where attacks shifted from the IADS to a broader spectrum of politically safe targets in Serbia and fielded forces in Kosovo.^{xli} Consequently, throughout the operation, the CFACC had to honor an intermittent IADS that was never completely neutralized thus requiring resources that could have been used elsewhere, limiting airpower’s freedom of action, and giving Milosevic some hope of holding out.^{xlii} SACEUR failed to specify the FRY IADS as a COG, failed to distinguish between the MUP and VJ actually favoring the 3rd Army to the detriment of the operation, and failed to appreciate the vulnerability of the leadership COG to an indirect approach. See Figure 4 for what NATO’s Operational Design should have looked like.

With Admiral James Ellis, USN, “dual hatted” as the U.S. Joint task Force (JTF) and NATO Southern Region (combatant) commander, SACEUR circumvented established

command relationships by performing many critical synchronization functions as if he was the JFC/combatant commander rather than focusing on his role as senior military advisor to the NAC.^{xliii} Despite reasonable theater military objectives developed by the U.S. JTF and acceptable phases developed by the NATO planning staff, SACEUR created tremendous friction by ignoring the established command arrangements and using his own “measures of merit” in place of theater military objectives to guide the air operation.^{xliv} SACEUR appeared to make all decisions regarding phasing, apportionment, and targeting with little regard for input from the CFACC or the Southern Region commander.^{xlv}

When it became clear on the fourth day that Phase I had not achieved the desired result, SACEUR convinced the NAC to authorize initiation of Phase II, which shifted emphasis from the IADS to interdiction.^{xlvi} SACEUR directed airpower against scattered VJ and MUP forces, choke points, storage and marshalling areas, any tank concentrations that could be found, and some politically safe targets in Serbia.^{xlvii} Attacks were hampered by poor weather, dispersal, and the ever-present IADS. Airpower had little success with interdiction and even less success attacking VJ and MUP elements in the field.^{xlviii} With Milosevic hunkering down in what seemed to be a calculated state of siege, and an ever-increasing number of Serb forces deployed in Kosovo, and almost all Kosovar Albanians on the run, the NAC began releasing Phase III targets on day nine of the operation.^{xlix}

Despite authorization to escalate attacks against leadership, C2, POL, and other targets in and around Belgrade, SACEUR insisted on a “denial” strategy against fielded forces in Kosovo and only a “risk” strategy aimed at Belgrade.¹ Instead of focusing on the Milosevic as the strategic COG, SACEUR put out an urgent request for an additional 300 fighter aircraft to attack MUP forces and VJ armored vehicles in what was designated the

Kosovo Engagement Zone (KEZ).^{li} Over the heated protests of the CFACC, SACEUR apportioned an ever-increasing weight of effort against “kill boxes” in the KEZ to seek out and destroy an adversary who was adept at camouflage concealment and deception (CCD). Consequently, attacks against fielded forces produced little in the way of tangible success.^{lii} Becoming desperate for victory a month into the operation, NATO reaffirmed its commitment to win, produced a set of concrete policy objectives, and further loosened the political controls on targeting.^{liii}

Throughout OAF, targeting involved simply parceling out sortie and munitions allocations as targets received political approval rather than seeking desired effects using operational fires in parallel to attack an entire target category.^{liv} Target approval was based on political considerations in Washington, London, Paris and other capitals without much consideration for how destruction or neutralization might advance the operation’s objectives.^{lv} SACEUR retained control of the targeting process but let excessive political considerations rather than military necessity drive the process. In addition, SACEUR used his daily VTC to micromanage the details including moving aim points and changing ordnance after the air tasking order had been published.^{lvi} After four weeks, 80 percent of the missions were re-attacks against targets already bombed as additional political approval was withheld and SACEUR wanted bombs to keep raining on Serbia.^{lvii} Consequently, politically safe targets such as refineries, bridges, and factories were attacked in a disconnected, piecemeal, and repetitious fashion over an elongated time frame rather than in a rapid, systemic manor as part of a larger plan that might undermine Milosevic’s power base.^{lviii} Gradual, hesitant strikes undermined airpower’s credibility leading to an incremental fight rather than a decisive operation and weakening rather than strengthening the alliance position

relative to Milosevic.^{lix} SACEUR put out a call for the selection of 2000 target nominations but offered no strategy or systemic analysis to guide target development.^{lx} There was no JTCB and no JFLCC to assist with target development in Kosovo.^{lxi} Aircraft response lagged the intelligence cycle resulting in missed opportunities against mobile targets.^{lxii} Consequently, NATO aircraft often bounced rubble or found nothing to hit in the KEZ.^{lxiii}

By the time Milosevic capitulated 78 days after the operation began, Serbia had forcefully ejected most Kosovar Albanians from the province and fielded forces had absorbed few tactical losses.^{lxiv} In addition, NATO had bombed most targets deemed necessary for a “punishment” strategy but the lengthy time frame resulted in a “risk” strategy. SACEUR’s reluctance to acknowledge the leadership regime in Belgrade as COG actually prolonged the operation. On a handful of nights, the NAC authorized a target array consistent with a “punishment” strategy and the evidence suggests the effect was dramatic. In the end, attacks against leadership targets and electrical production helped set the conditions for a negotiated settlement more so than attacks against fielded forces in the KEZ. The withdrawal of Russian support seemed to push Milosevic over the diplomatic edge with conditions for a negotiated settlement established by airpower.^{lxv} NATO didn’t loose. However, NATO might have achieved its objectives earlier if SACEUR had insisted on positive objectives, correctly distinguished COGs, properly apportioned available resources, and used a better targeting process to achieve desired effects within political constraints.^{lxvi}

Recommendations

The responsibility for effectively employing operational fires rests squarely with the JFC. The proper employment The importance of constructing an effective Operational Design with the proper national policy objectives, COGs, theater military objectives and phasing is readily apparent from the ODS and OAF case studies. These same case studies

demonstrate that ambiguity in current joint doctrine can inhibit synchronization of operational fires. The following discussion regarding apportionment, JTCB, and FSCL offer a counter argument to the status quo of current joint doctrine.

Apportionment

The JFC uses the air apportionment decision to ensure the weight of effort for operational fires is consistent with campaign phases and objectives in the Operational Design. A proper apportionment decision ensures economy of force. However, according to current joint doctrine, the apportionment decision process actually begins in the air component with the JFACC and his staff, in coordination with the other component commanders (normally through the AOC component liaisons) making an apportionment recommendation to the JFC. Given the potential, real or imagined, for the JFACC to produce an apportionment recommendation without fully incorporating the desires of the other component commanders, the JFC staff should prepare the apportionment recommendation. The JFC staff in concert with the JFC is in a better position to assess execution status and develop a proposed weight of effort distribution.

To facilitate apportionment, phases should be created along the lines of strategic attack, interdiction, close air support, maritime support, and a new mission designation of deep battlefield preparation (DBP). As the name implies, DBP would direct operational fires beyond the FSCL (maximum cannon artillery range) against those targets that have a direct or near term effect on land component operations. To the maximum extent possible, assets organic to the land component such as attack helicopters, the Army tactical missile system (ATACMS), and the multiple launched rocket system (MLRS) should attack these targets. If the operational design requires a greater weight of effort than the land component can produce, the JFC will then use the air apportionment decision to assign additional resources.

The JFC should meet in person or telephonically every twelve hours with the component commanders and discuss apportionment of operational fires as the first item of business after an intelligence and operational update. Consequently, joint doctrine should mandate the designation of a land, air, maritime, and special operations component commander for every major operation or campaign. In this way, each component commander has an equal say and the JFC makes an informed decision to support his Operational Design rather than rubber-stamping a JFACC produced product that could easily increase friction, inhibit trust, and decrease combat effectiveness.

Joint Targeting Coordination Board

Joint doctrine should mandate establishment of a joint targeting coordination board (JTCB) at the JFC level.^{lxvii} The JTCB function should be the second item of discussion at the twice-daily meeting between the JFC and component commanders. Instead of discussing all component target nominations and the entire master target list, the JTCB should discuss broad targeting guidance and priorities in terms of the three distinct missions of strategic attack, interdiction, and deep battlefield preparation.

For strategic attack, the JTCB should prioritize target categories, determine desired effect, discuss special targets, solicit any target nominations from the land or maritime components, and then establish how much of the apportioned effort will be assigned to each broad category. The JFACC, as the supported commander for strategic attack, would then uses the extensive C4ISR and planning capability at his disposal to develop individual targets and create a prioritized strategic target listing (PSTL) in accordance with JFC guidance promulgated through the JTCB. The JFACC would then allocate the necessary resources

through the master air attack plan (MAAP) and air tasking order (ATO) to comply with the air apportionment decision, and JTCB guidance in support of the operational design.

In the case of land and maritime interdiction targets, joint doctrine should mandate the creation of a joint targeting coordination working group (JTCWG) chaired by the air component with participation by the senior liaisons from the other components. The JTCWG would consolidate interdiction target inputs from all components and create a prioritized interdiction target listing (PITL) prior to the start of the JTCB. The JTCB would then review the PITL, and under the direction of the JFC, rearrange target priorities by category or individual aim point as necessary to fit the JFC's operational scheme. In addition, the JFC would adjudicate disagreements between the components over target prioritization and PITL composition if the JTCWG could not reach consensus. As the supported commander for interdiction, the JFACC would then allocate the necessary resources through the MAAP and ATO to execute the JFC's operational design.

The very deliberate ATO planning cycle is not responsive to the mobile and fleeting nature of DBP targets. Consequently, the JFC should prioritize DBP targets by "kill box" and establish how much of the apportioned effort is assigned to the each area. After use in ODS, OAF, Operation Enduring Freedom (OEF), and Operation Iraqi Freedom (OIF), the "kill box" concept should become part of targeting doctrine. The JFLCC should develop and maintain a deep battlefield prioritized target listing (DBPTL) that is updated several times per day according to the land component intelligence cycle and cross reference by "kill box". At the JTCB the JFLCC presents his desired DBP targeting requests. The JFC then assigns priorities to fit his operational scheme. The JFACC should be the supported commander for

DBP targeting, and like the other two categories, would allocate resources based on JFC's air apportionment decision and JFC approved DBPTL.

The land and air components can leverage advances in communication architectures and the digitization of the battlefield to write the battle rhythms necessary for dynamic retasking of DBP sorties into joint doctrine. In this way, target movement detected by the land component intelligence cycle prior to air component execution is flashed to the air operations center (AOC) and then transmitted to the appropriate air base for replanning prior to takeoff or beamed to an airborne control element (ACE) (AWACS or JSTARS) for in-flight retasking. Using the same the communication architectures, the land component should be able to coordinate the employment of organic operational fires beyond the FSCL in near real time. In this way, with JFC approval, the land component sends the mission particulars to the AOC, which in turn relays approval to the ACE who clears a free fire zone for the duration of the land component operational fires. In this construct, the JTCC and ATO cycle become responsive to the JFLCC DBP targeting requirements without taking away from the more deliberate aspect of planning strategic attack and interdiction missions.

Fire Support Coordination Line

Joint doctrine should change to make the FSCL a restrictive boundary established by the JFC since he is in a better position than the Corps commanders to assess the overall status of the Operational Scheme and synchronize operational fires accordingly. Placement of the FSCL should be the third item on the agenda for the twice-daily meeting between the JFC and component commanders. The process described above for the land component to orchestrate fires beyond the FSCL in near real time should alleviate concern that a restrictive FSCL will limit the Corps commander's freedom of action. Communication architectures

and digitalization of the battlefield should be leveraged to enable near real-time JFC authorization and transmission to all components, including the ACE, of changes to the FSCL. For a non linear battlefield, FSCL like coordination measures could also be designated by “kill box” i.e. a free fire zone or an area requiring coordination with a forward air controller (FAC) to employ ordnance. This construct enables the JFC to fulfill his role in synchronizing fires while ensuring both the air component or land component have the freedom of action to support the Operational Design.

Conclusion

The JFC should always begin a campaign or major operation with an Operational Design where there is harmony between national policy objectives, centers of gravity, sequencing, and synchronization. Since sound C2 procedures assured by proper command relationships are the most important considerations to properly synchronize operational fires, the JFC should always designate a land, air, maritime, and special operations component for any campaign or major operation. In addition, the JFC should never delegate responsibility and broad oversight of synchronization to a component or Corps commander. To that end, the JFC should, in concert with his component commanders, play the lead role in making the air apportionment decision, orchestrating the JTCCB, and designating the FSCL. The revolution in communications and computers can be used to rapidly respond to changes resulting from the deep battlefield preparation target intelligence cycle, deconflict time sensitive, unplanned employment of land component operational fires beyond the FSCL, and authorize and communicate changes to the FSCL in near real time. In this way, the JFC retains the degree of control necessary for synchronization yet gives subordinate

commanders the freedom of action necessary to accomplish their individual missions while at the same time complementing each other in executing the operational design.

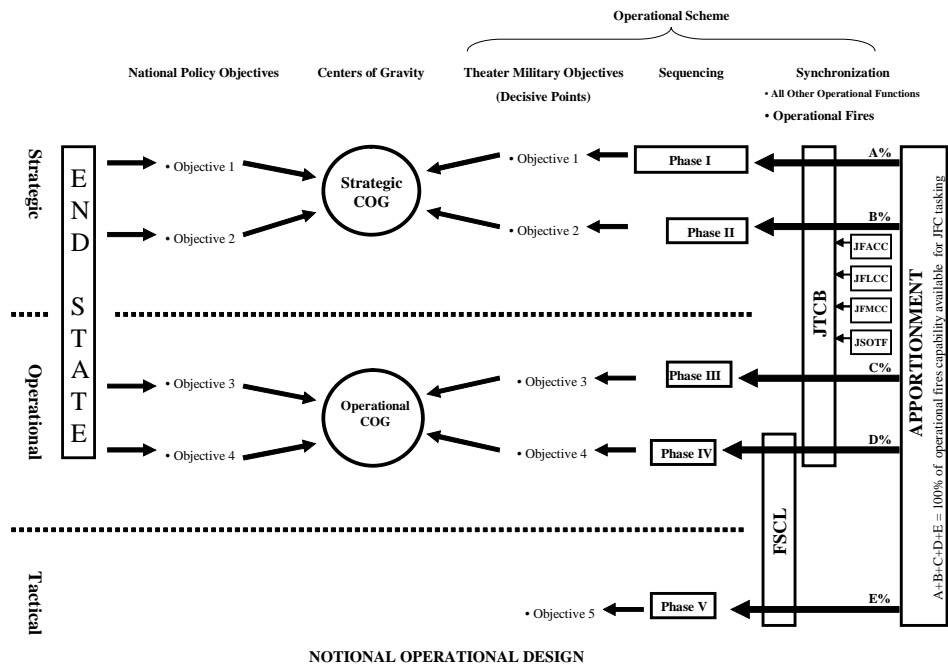


Figure 1

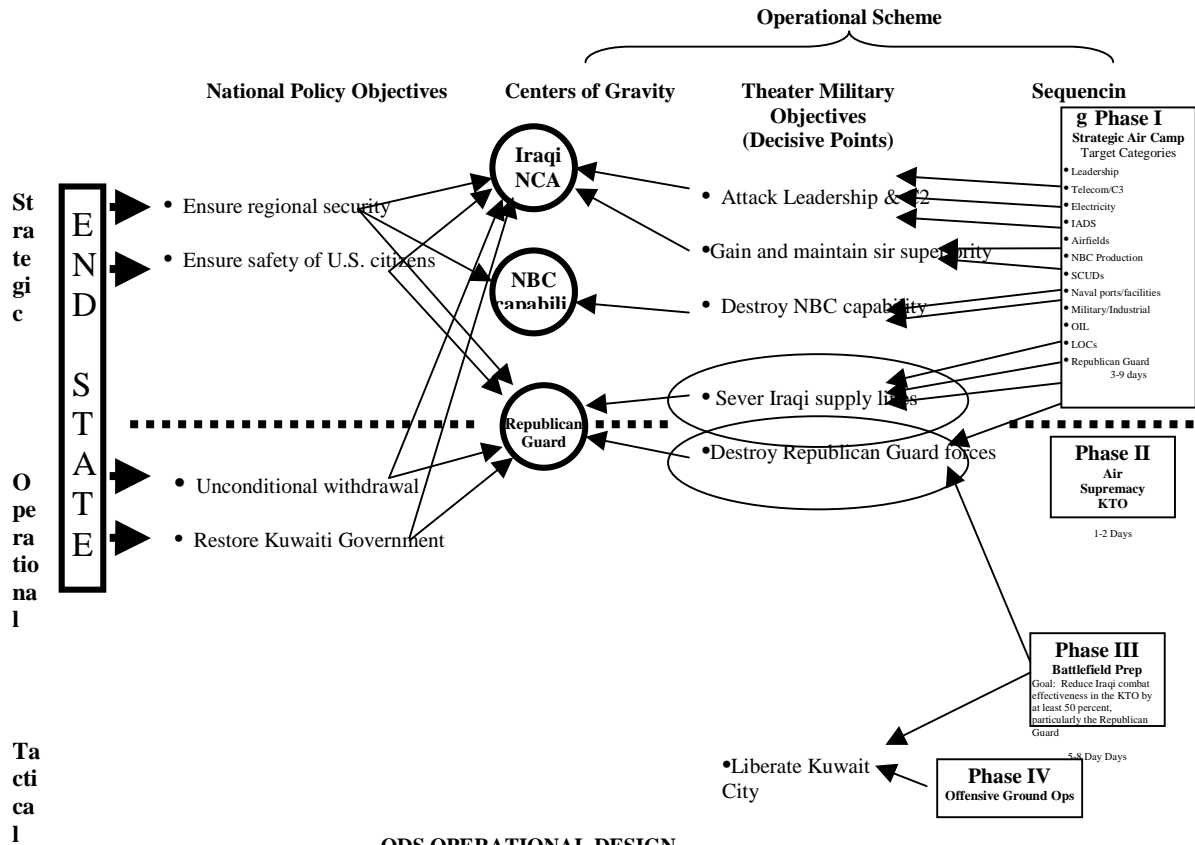
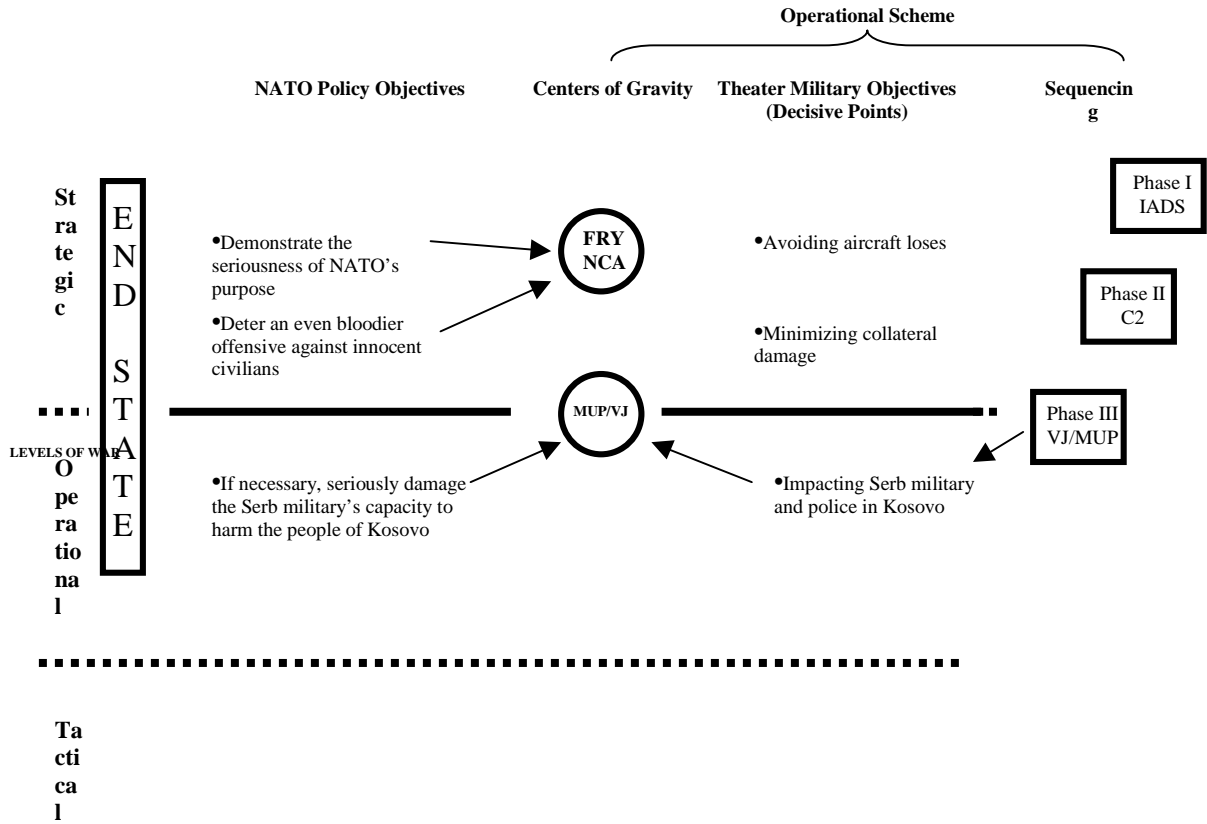


Figure 2



Bibliography

- Atkinson, Rick. Crusade: The Untold Story of the Persian Gulf War. Boston: Little Brown and Company, 1993.
- Clark, Wesley K.. Waging Modern War: Bosnia, Kosovo and the Future of Combat. New York: Public Affairs, 2001.
- Clodfelter, Mark. The Limits of Airpower: The American Bombing of North Vietnam. New York: The Free Press, 1989.
- Coram, Robert. Boyd: The Fighter Pilot Who Changed The Art Of War. Boston: Little Brown and Company, 2002.
- Daaler, Ivo H. and O'Hanlon, Michael E. Winning Ugly: NATO's War to Save Kosovo. Washington DC: Brookings Institution Press, 2000.
- Department of Defense. Report To Congress: Kosovo/Operation Allied Force After Action Report. Washington D.C.: U.S. Government Printing Office, 31 January 2000.
- Gordon, Michael R. and Trainor, General Bernard E.. The Generals' War: The Inside Story of the Conflict in the Gulf. Boston: Little Brown and Company, 1995.
- Keaney, Thomas A. and Cohen, Elliot A.. Gulf War Air Power Summary Report. Washington DC: U.S. Government Printing Office, 1993.
- Lambeth, Benjamin S. NATO's Air War for Kosovo: A Strategic and Operational Assessment. Santa Monica CA: RAND, 2001.
- Laughbaum, Lt Col R. Kent, USAF. Synchronizing Airpower and Firepower in the Deep Battle. Maxwell Air Force Base, Alabama: Air University Press, 1999.
- Nardulli, Bruce R and others. Disjointed War: Military Operations in Kosovo. Santa Monica CA: Rand Corp, 1999.
- Pape, Robert A.. Bombing to Win. New York: Cornell University Press, 1996.
- Scales, Brigadier General Robert H., Jr.. Certain Victory. Washington: Office of the Chief of Staff United States Army, 1993.
- Tripak, John A.. "Short's View of the Air Campaign," Air Force Association Magazine. Vol 82, No. 9 (September 1999): 35-40.
- U.S. Joint Chiefs of Staff. Doctrine For Joint Operations. Joint Pub 3-0. Washington, DC: 10 September 2001.
- U.S. Joint Chiefs of Staff. Joint Doctrine for Campaign Planning. Joint Publication 5-00.1. Washington, DC: 25 January 2002.
- Vego, Milan Operational Warfare. Newport, Rhode Island: Naval War College Press, 2000.
- Winnefeld, James A. and Johnson, Dana J.. Joint Air Operations: Pursuit of Unity In Command and Control, 1942-1991. Annapolis, Maryland: Naval Institute Press, 1993.

ⁱ Objective is the first principle of war – “The purpose of the objective is to direct every military operation toward a clearly defined, decisive, and obtainable objective. ... Each operation must contribute to strategic objectives. *JFCs should avoid actions that do not contribute directly to achieving the objective(s).*” (Emphasis added). Joint Chiefs of Staff, Doctrine For Joint Operations, Joint Publication 3-0 (Washington DC: 10 September 2001), A-1. Hereafter referred to as Joint Pub 3-0. To standardize terminology, prevent over use of the terms strategic and operational, and avoid confusion, the term **national policy objective** is used to represent the highest level of objectives akin to the use of strategic objective in many publications. In a like manner, the term **theater military objective** is used in place of what many publications refer to as operational objectives.

ⁱⁱ Operational art is “The employment of military forces to attain strategic and or operational objectives through the design, organization, integration, and conduct of strategies, campaigns, major operations, and battles. Operational art translates the joint force commander’s strategy into an **operational design**, and ultimately, tactical action, by integrating the key activities of all levels of war. To the extent possible, JFCs attack adversary COGs directly. Where direct attack means attacking into an opponents strength, JFCs should seek an indirect approach”. Joint Pub 3-0, III-22, 23, GL-5, and GL-14.

ⁱⁱⁱ Decisive points can be geographic in nature, a key event, or a systemic function (for example, electrical power production and distribution). “Decisive points are not COGs; they are the keys to attacking protected COGs”. Planners must analyze potential decisive points and determine which points enable attack against enemy COGs. The JFC then designates the most important decisive points as theater military objectives and apportions resources to control, neutralize or destroy them.” Joint Pub 3-0, III-23

^{iv} **Sequencing** is the arrangement of events to eliminate enemy COGs. The main elements of sequencing are objectives and phases (tasks combined with a time line). Milan Vego, Operational Warfare (Newport, Rhode Island: Naval War College Press 2000), 531-543. **Synchronization** is an iterative and constant process to produce synergistic combat power concentrated at the decisive time and place (which is constantly changing) across the breadth and depth of the battle space. Vego, 545-558. Diverse and multiple centers of gravity at the tactical level are relatively easy to form and then eliminate by elements of the opposing fielded forces. Consequently, discussion of specific tactical level centers of gravity has little utility for an Operational Design. Vego, 313. For the purpose of this analysis, **Operational Fires** are defined as those fires (aircraft, attack helicopters, Tomahawk Land Attack Missiles (TLAM), Army Tactical Missile System (ATACMS), and the Multiple Launched Rocket System (MLRS) operating beyond tactical range (maximum cannon artillery range from the forward line of own troops (FLOT)) to accomplish a theater military objective or attack a COG. For a discussion of fires see Joint Pub 3-0, III-27 and Vego, 239-258.

^v Vego, 552.

^{vi} Vego, 552.

^{vii} “**Air apportionment** is the determination and assignment of the total expected effort by percentage and/or priority that should be devoted to the various operations for a given period of time. The total expected effort made available to the JFACC is determined by the JFC in consultation with component commanders based on the assigned objectives and the concept of operations. Given the many airpower capabilities, its theater-wide application, and its ability to rapidly shift from one function to another, JFCs pay particular attention to its apportionment. JFCs normally apportion by priority or percentage of effort against assigned mission-type orders and/or by categories significant for the campaign. These categories can include strategic attack, interdiction, counter air, reconnaissance, maritime support, and close air support.” Joint Pub 3-0, III-29. “Typically, JFCs organize **joint targeting coordination boards (JTCBs)**. If the JFC so designates, a JTCB may be an integrating center for this effort or a JFC-level review mechanism. In either case, it needs to be a joint activity comprised of representatives from the staff, all components and, if required, their subordinate units. JFCs task subordinate commanders or staff officers with the JTCB function based on the FC’s concept of operations and the individuals’ experience, expertise, and situational awareness. The JFC defines the role of the JTCB. Typically, the JTCB reviews target information, develops targeting guidance and priorities, and may prepare and refine joint target lists. The JTCB also should maintain complete list of prohibited and restricted targets, targets deemed sensitive due to collateral damage potential, and areas where SOF are operating to avoid endangering current or future operations.” Joint Pub 3-0, III-28. “The **Fire Support Coordination Line (FSCL)** is a fire support coordinating measure that is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. An FSCL facilitates the expeditious attack of targets of opportunity beyond the coordinating measure. The FSCL is a term oriented to air land operations; there is no similar term used at sea. An FSCL does not divide an AO by defining a boundary between close and deep operations or a zone for close air support. The FSCL applies to all fires of air, land, and sea-based weapons systems using any type of ammunition. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide. Supporting elements attacking targets beyond the FSCL must ensure that the attack will not produce adverse attacks on, or to the rear of, the line. Short of an FSCL, the appropriate land or amphibious force commander controls all air-to-ground and surface-to-surface attack operations. The FSCL should follow well-defined terrain features. Coordination of attacks beyond the FSCL is especially critical to commanders of air, land, and special operations forces. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the FSCL. However, failure to do so may increase the risk of fratricide and could waste limited resources. The FSCL is not a boundary — the integration and synchronization of operations on either side of the FSCL is the responsibility of the establishing commander out to the limits of the land or amphibious force boundary. Placement of the FSCL should strike a balance so as not to unduly inhibit operational tempo while maximizing the effectiveness of organic and joint force interdiction assets. Establishment of the FSCL too far forward of friendly forces can limit the responsiveness of air interdiction sorties and could unduly hinder expeditious attack of adversary forces. To avoid fratricide, changes to the FSCL must be thoroughly coordinated and allow for sufficient time for complete dissemination.” Joint Pub 3-0, III-42, 43,44.

^{viii} An **Operational Design** provides a conceptual framework for linking ends, ways, means, and key considerations in the course of planning a campaign or major operation. “The elements of an operational design are a tool to aid the combatant commander and planners in visualizing what the campaign should look like and shaping the commander’s intent. The key elements of an operational design are: (1) understanding the strategic guidance (determining the desired end state and military objectives(s)); (2) identifying the critical factors (principal adversary strengths, including the strategic COGs, and weaknesses); and (3) developing an operational concept or scheme that will achieve the strategic objective(s).” See Joint Chiefs of Staff, Joint Doctrine for Campaign Planning, Joint Publication 5-00.1 (Washington DC: 25 January 2002), viii – ix. The Operational Design presented in Figure 1 is a synthesis of U.S. Joint Doctrine, Operational Warfare, Naval War College (NWC) Joint Military Operations (JMO) course instruction, a conversation with Professor Patrick Sweeney, NWC JMO department, and my own ideas.

^{ix} Using Col John Boyd’s observe - orient - decide - act (OODA) loop construct offers a useful methodology to quickly assess the current effectiveness of command and control in sequencing and synchronizing operational fires. Improved intelligence, surveillance, and reconnaissance (ISR) capabilities enhance the ability to identify and locate, in broad terms, an adversary’s COGs and associated decisive points thus compressing the time

necessary for the OODA loop “observe” and “orient” phases. The revolution in military affairs has significantly enhanced battlefield lethality while compressing the time and increasing the capability to mass joint fires from a distributed network to attack strategic and operational COGs and associated decisive points thereby increasing the tempo and effectiveness of the OODA loop “act” phase. However, poor command relationships and cumbersome C2 processes often create friction within the OODA loop “Act” phase thus preventing the full exploitation of operational fires. For a full discussion of Boyd’s OODA Loop see Robert Coram, Boyd: The Fighter Pilot Who Changed The Art Of War (Boston: Little Brown and Company, 2002) 334-339.

^x Planners made Phase II, Air Superiority in the Kuwaiti Theater of Operations (KTO), a separate phase only to satisfy General Schwarzkopf. The air component viewed the Iraqi air defense system as a whole including the KTO. For the air component, Phase II received no special elaboration existing only on paper and in the mind of the JFC. For a complete discussion of national Policy Objectives, COGs, Theater Military Objectives, and campaign phases see Thomas A. Keaney and Elliot A. Cohen, Gulf War Air Power Summary Report (Washington D.C.: U.S. Government Printing Office, 1993), 28-53 henceforth referred to as GWAPS.

^{xi} Rick Atkinson, Crusade: The Untold Story of the Persian Gulf War, (Boston: Little Brown and Company, 1993), 105-106.

^{xii} Schwarzkopf continually made changes to the air component targeting plan for the next day’s missions during his daily 1900 meeting with Horner by directing assets against different kill boxes than originally planned. The Army was particularly frustrated with these changes as they scrambled to come up with new targets using old data that often proved wrong. Ultimately, the Army built a target base for all Iraqi army units regardless of their priority to the Corps Commander’s scheme of maneuver ensuring they were prepared to flex when the JFC changed the kill box priority at the eleventh hour. The last minute changes provided little time for proper intelligence support and mission planning resulting in aircrews often finding open desert instead of a target when they arrived at the specified coordinates. Brigadier General Robert H. Scales, Jr., Certain Victory, (Washington: Office of the Chief of Staff United States Army 1993), 180-181.

^{xiii} The tension between the JFACC and land component festered and persisted because American ground commanders did not understand that many decisions counter to their desires were made by Schwarzkopf not the JFACC, Lt Gen Charles Horner. Schwarzkopf emphasized bombing the republican Guard divisions rather than the Iraqi conscript divisions opposite the U.S. Army and Marine Corps positions. The JFC also supported Horner’s use of “tank plinking” to destroy armored vehicles using precision guided munitions (PGMs) in the KTO. In fact, the greatest impact on Iraqi equipment attrition occurred by employing laser guided bombs on Iraqi armor beginning on 6 Feb 91 and continuing to the end of the war (GWAPS, 105). The VII Corps Commander, Lt General Frederick Franks as well as Marine Expeditionary Force (MEF) Commander, Lt General Walter Boomer were confident the American tanks would easily outmatch their Iraqi counter parts. Instead, Franks and Boomer wanted attacks against Iraqi artillery, which could deliver chemical munitions making the breach of the Iraqi border defenses potentially very costly. Most of the demand for more bombing of the Iraqi frontline troops came from Franks whose VII Corps would thrust into entrenched Iraqi positions as the inner thrust of the “Left Hook”. But since the “Left Hook” was shrouded in secrecy, Schwarzkopf didn’t want to tip off the Iraqi formations opposite Franks. Schwarzkopf therefore chose to direct battlefield preparation fires elsewhere until two weeks prior to the ground offensive. Of note, the MEF retained control over much of the Marine Air Wing and along with JFC apportioned air component assets, was relatively satisfied with the shaping of the battlefield in front of their position. The XVIII Airborne Corps would make a flanking maneuver into open desert as part of the “Left Hook” and was also relatively satisfied with battlefield preparation fires. GWAPS, 155-156.

^{xiv} AirLand battle doctrine relies on the premise that the JFC will apportion some discrete amount of airpower to kill or hold in place distant enemy ground units long enough for the Corps Commander to maneuver against them. The Corps Commander chooses his axis of advance, then carefully calculates time and distance to determine which components of the enemy force arrayed in depth threaten his advance. Consequently, the Corps Commander requests airpower apportioned for battlefield preparation to attack those targets opposing his maneuver. Synchronization of apportioned airpower through some sort of targeting process is just as important to the Corps Commander’s scheme of maneuver as synchronization of operational fires is to the JFC’s operational design. See Scales 174-175.

^{xv} The selection of target categories and individual aim points to attack decisive points whose neutralization or destruction will achieve the desired national policy objectives is an intelligence intensive and time consuming process. Intelligence uncertainties or gaps are the rule rather than the exception. However, most strategic

targets in Iraq were fixed installations where a continuous intelligence cycle could often overcome these gaps. The very deliberate process of target nomination, assessment, attack, renomination, reassessment, and reattack for fixed targets is effectively prosecuted with the iterative process of constructing the Master Air Attack Plan (MAAP) then building an Air Tasking Order (ATO). (GWAPS 135-137) This process has historically required forty-eight hours or more but attempts to shorten the cycle are on going. Nonetheless, the process is not responsive to large scale changes within twelve hours of execution as changes in aircraft configuration, weapons load, mission timing, target area, and tanker support inevitably lead to increased risk from less thorough deconfliction and decreased effectiveness resulting from decreased planning time. Aside from dedicating airborne alert assets, the ATO process is not responsive to time critical or mobile target tasking. (Winnefeld 110) The air component juggled three days worth of events simultaneously: air operations on the current day; creation and dissemination of an ATO for the following day, and formulation of a MAAP beginning starting forty-eight hours in the future. The ATO directed sequencing and synchronization of over 1300 attack platforms to include theater land and sea based fighters, bombers from outside the theater, TLAMS, attack helicopters on deep missions, plus a myriad of supporting assets. If an air liaison officer assigned to an army unit did not receive this massive document there was no way of knowing if the land commanders request for battlefield preparation had been approved. Scales 178

^{xvi} GWAPS 105, 154-156,

^{xvii} A 219

^{xviii} A day after the air war began, Iraq launched the first of 86 Scud missiles at Israel and Saudi Arabia (Scales, 181). Schwarzkopf believed the Scud to be a militarily insignificant weapon but he was directed by Washington to apportion an ever increasing surveillance and attack effort to hunt the Scuds as a means to reassure Israel in an effort to prevent a retaliatory attack by the Jewish state that might fracture the Arab-American coalition (Atkinson, 97, 119). A week into the air war, the JFC had redirected 40% of the Phase III sorties to hunting for mobile Scuds (Scales, 184). Three squadrons of attack aircraft were detailed to the Scud hunting mission with dubious results. Nonetheless, aircraft dedicated to hunting mobile Scud launchers were not available to prosecute attacks against COGs and decisive points (Atkinson, 146-147). Although the JFC was unhappy, it is my opinion that the use of aircraft for Scud hunting contributed more to the operational design at this stage of the campaign than shaping the battlefield. Eliminating the mobile Scud threat (in my opinion) contributed to the neutralization of the NBC capability COG. However, the diversion of the aircraft away from shaping the battlefield only increased the tension between the air and land components and contributed to the JFC's eventual and premature decision to apportion most of his operational fires to shaping the battlefield.

During Desert Storm, many proponents of air power believed that technology had finally caught up with doctrine and air power would act as the primary element of military power to achieve both political and military objectives. Strategic air power was the primary element to achieve the theater commander's objectives of: attacking Iraqi political/military leadership and command and control; gaining and maintaining air superiority; and destroying chemical, biological, and nuclear capability. However, Billy Mitchell would be vindicated and the real prize won if strategic attacks could force the Iraqis to abandon Kuwait without a land offensive and achieve the unstated objective of forcing Saddam Hussein's regime to collapse from within. Despite the expected fog, friction, and chance, the strategic air campaign against Iraq was progressing slower than desired as a result of the worst weather in years. On February 1, 1991, a quick reaction daytime Tomahawk land attack missile (TLAM) strike was conducted against the Al Rasid air base near Baghdad where Mig-21 drones capable of carrying chemical weapons were detected. The six TLAMs flew across Baghdad at 60-second intervals in full view of network TV cameras. The televised images of the sinister looking missiles as well as the collateral damage caused by the shooting down of one of the missiles had an unsettling effect on coalition partners. Consequently, CJCS General Colin Powell ordered that there be no more daytime TLAM attacks against Baghdad thus giving the Iraqi capital a daytime respite from strategic attack. The strategic campaign was further constrained when two F-117s attacked the Al Firdos bunker in Baghdad – an alternate command and control facility that was also used as a civilian air raid shelter. In the wake of an intelligence failure that resulted in 200 deaths, targeting requests in Baghdad had to be reviewed and approved by General Powell who now believed that the strategic bombing campaign had run its course. Poor weather up to the time of Al Firdos had enabled attacking only one third of the planned strategic targets while Powell's decision would prevent engaging the remaining two thirds. Atkinson, 223-225, 285-292.

^{xix} James A. Winnefeld and Dana J. Johnson, Joint Air Operations: Pursuit of Unity In Command and Control, 1942-1991, (Annapolis, Maryland: Naval Institute Press 1993), 136.

^{xx} Atkinson, 146-147.

^{xxi} The U.S. Army used a composite combat effectiveness model that used armored vehicles and artillery as a baseline while incorporating assessments of leadership, C2, discipline, and morale. Interestingly, the model counted only 33% of claimed A-10 kills and associated battle damage assessment (BDA) imagery while counting only 50% of F-111F and F-15E kills supported by onboard sensor video. Using this system the three heavy divisions of the Republican Guard were assessed as follows: Hammurabi armored division 72%; Medina armored division 65%; and Tawakalna mechanized infantry division 57%. The three RG infantry divisions were assessed as 60% combat effective. (Scales, 187, 208-209). However, it appears that the actual armor attrition rate was only 24% among RG divisions prior to the beginning of the ground offensive. (GWAPS, 106)

^{xxii} The Republican Guard was a firepower intensive, mobile fighting force critical to internal security and capable of projecting power against Iraq's neighbors. It was a COG with both strategic and operational level implications as well as vulnerability to attack from operational fires. Its destruction would facilitate achievement of all National Policy Objectives given the other two COGs were less vulnerable to direct attack from operational fires. Schwarzkopf's failure to destroy the Republican Guard enabled Saddam Hussein to crush the Shiite and Kurdish rebellions in the immediate aftermath of ODS, leading to twelve long years of containment.

^{xxiii} Due to a variety of external dynamics discussed in the text and notes, the strategic air campaign was unable to collapse the Iraqi leadership or completely eliminate Baghdad's NBC capability. The Republican Guard was the one remaining COG whose neutralization or destruction could ensure some degree of success in achieving all national policy objectives. For a discussion on the early initiation of the ground offensive and ground offensive operational scheme see Michael R. Gordon and General Bernard E. Trainor, The Generals' War: The Inside Story of the Conflict in the Gulf (Boston: Little Brown and Company, 1995), 332-354 and 375-413.

^{xxiv} "The highway of death" was more politically damaging than militarily useful. The 1400 abandoned and burning vehicles spread over two miles of roadway included only 14 tanks and 14 armored vehicles while casualties were estimated at 200-300 Iraqis killed. GWAPS, 112-113.

^{xxv} Historically, the (FSCL) was normally set at the maximum artillery range and served as an unofficial boundary between the deep battle synchronized by the air commander and the decisive close battle synchronized by the ground commander. However, land commanders believe that they should now synchronize the deep battle with the increased speed of land warfare as well as organic systems capable of influencing the deep battle such as Apache helicopters, Multiple Launched Rocket System (MLRS), and the Army Tactical Missile System (ATACMS). Current joint doctrine gives land commanders the authority to establish and adjust the FSCL but does not designate who is responsible for synchronizing the deep battle. In addition, joint doctrine emphasizes that the FSCL is not a boundary but offers little in the way of a concrete coordination framework. For a complete history of the FSCL see Lt Col R. Kent Laughbaum, USAF, Synchronizing Airpower and Firepower in the Deep Battle (Maxwell Air Force Base, Alabama: Air University Press 1999). For current joint doctrine see Joint Pub 3-0.

^{xxvi} Gordon and Trainor, 411-413

^{xxvii} Economy of Force is a principle of war designed to allocate the minimum essential combat power to secondary efforts while massing elsewhere at the decisive time and place. Joint Pub 3-0, A-1. Given the Operational Design, battlefield preparation was arguably a secondary effort during the first few weeks of the campaign.

^{xxviii} Ivo H. Daaler and Michael E. O'Hanlon, Winning Ugly: NATO's War to Save Kosovo, (Washington D.C.: Brookings Institution Press 2000), 18.

^{xxix} In an address to the nation on 24 March 1999, the day the air strikes began, president Bill Clinton stated the alliance's three strategic objectives were: "To demonstrate the seriousness of NATO's purpose so that the Serbian leaders understand the imperative of reversing course, deter an even bloodier offensive against innocent civilians in Kosovo; and if necessary, to seriously damage the Serb military's capacity to harm the people of Kosovo". Daaler and O'Hanlon, 101. NATO's unstated fourth objective was to ensure alliance cohesion. See Benjamin S. Lambeth, NATO's Air War for Kosovo: A Strategic and Operational Assessment, (Santa Monica CA: RAND 2001), xiii.

^{xxx} Bruce R Nardulli and others, Disjointed War: Military Operations in Kosovo, (Santa Monica CA: Rand Corp 1999), 2.

^{xxxi} Lambeth, 24-25.

^{xxxii} General Clark stated that maintaining alliance cohesion was one of his measures of merit. See Wesley K. Clark, Waging Modern War: Bosnia, Kosovo and the Future of Combat, (New York: Public Affairs 2001), 346.

^{xxxiii} Lambeth, xiii.

^{xxxiv} Dispersing forces to keep them from becoming a lucrative target for air strikes typically leaves an opponent more vulnerable to piecemeal defeat on the ground. However in the case of the MUP and VJ, forcing the expulsion of unarmed civilians required little massing of military and paramilitary forces. In addition, during the early stages of the air operation, the Kososvo Liberation Army (KLA) could mount little effective resistance allowing the VJ and MUP to remain dispersed with considerable freedom of action even in the face of NATO air strikes. Nardulli, xiv, xvi.

^{xxxv} Daaler and O'Hanlon, 113.

^{xxxvi} "Coercion seeks to change the behavior of states that still retain the capacity for organized military resistance. ... Coercion can succeed only when the cost of surrender is lower than the costs of resistance. ... Punishment strategies attempt to raise the costs of continued resistance; ...the common feature of all punishment campaigns is that they inflict suffering on civilians either directly or indirectly by damaging the target state's economy." See Robert A. Pape, Bombing to Win, (New York: Cornell University Press 1996), 13,18.

^{xxxvii} John A. Tripak, "Short's View of the Air Campaign," Air Force Association Magazine, Vol 82, No. 9 (September 1999), 35-40.

^{xxxviii} Lambeth, 185.

^{xxxix} Vego suggests that the mass of the enemy force with the greatest firepower and mobility is the operational COG. See Vego, 311.

^{xl} Lambeth, 21.

^{xli} Lambeth, 25-26.

^{xlii} Lambeth, 230.

^{xliii} Lambeth, 193.

^{xliv} NATO's five military objectives were to: Enable unhindered NATO air operations; Isolate Serb military and security forces in Kosovo; Degrade combat capability of Serb military and security forces in Kosovo; Compel Yugoslav leaders to withdraw their forces from Kosovo and cease hostilities; and Reduce Yugoslav capability to conduct and sustain offensive operations. Department of Defense, Report To Congress: Kosovo/Operation Allied Force After Action Report, (Washington D.C.: U.S. Government Printing Office 31 January 2000), 24. Clark stated his four measures of merit were: "avoiding aircraft losses, impacting Serb military and police in Kosovo, minimizing collateral damage, and maintaining alliance cohesion." For the purpose of this analysis, alliance cohesion is considered a NATO Policy Objective. See Clark, 346.

^{xlv} The fact that Clark circumvented the established chain of command on a regular basis suggests that he didn't respect or trust the designated combatant commander or CFACC. According to General Clark, "My real window on the operation was going to be provided by the senior U.S. airman in Europe, John Jumper. Although he wasn't in the NATO chain of command for this operation, as the senior American airman he was my advisor and had all the technology and communications to keep a real-time read on the operations. As Mike Short's commander in the American chain of command, he also had a certain amount of influence in an advisory capacity." Clark, 195. (General John Jumper was commander, U.S. Air Forces Europe and Lt General Michael Short reported to him as commander of the U.S. 16th Air Force. Short was also the commander of Allied Air Forces Southern Europe (COMAIRSOUTH) and the CFACC reporting to Admiral James Ellis who was CINC Allied Forces Southern Europe (CINCSOUTH)). "In one reported exchange during daily a daily video teleconference, Clark insisted that NATO airpower remain committed against enemy fielded forces in Kosovo, and Short countered that such missions were a waste of assets and should be supplanted by missions against downtown Belgrade. Noting that U.S. aircraft were about to attack Serbian special police headquarters in Belgrade, Short said: "This is the jewel in the crown." To which Clark replied: "To me, the Jewel in the crown is when those B-52s rumble across Kosovo." Short; You and I have known for weeks that we have different jewelers." Clark: "My Jeweler outranks yours." Lambeth, 192-193.

^{xlvi} Lambeth, 25-26.

^{xlvii} Ibid.

^{xlviii} Lambeth, 27.

^{lix} The NAC never officially initiated Phase III instead choosing a politically safe alternative of slowly releasing the Phase III targets. Lambeth, 26-27,29, 187, and 204.

^l Lambeth, 29. "**Denial strategies** target the opponent's military ability to achieve its territorial or other political objectives, thereby compelling concessions in order to avoid futile expenditure of further resources. ... denial strategies make no special effort to cause suffering to the opponent's society, only to deny the opponent

hope of achieving the disputed territorial objectives. Thus, denial campaigns focus on the target states' military strategy. ... **risk strategies** slowly raise the probability of civilian damage. The crucial element here is timing. The coercer puts at risk essentially the same targets as in punishment strategies, but the key is to inflict civilian costs at a gradually increasing rate rather than destroy the entire target set in one fell swoop. In order to convince the opponent that much more severe damage will follow if concessions are not made, operations are slowly escalated in intensity, geographical extent, or both." See Pape, 18-19. Ibid.

^{li} Lambeth, 32-33.

^{lii} Lambeth, 29.

^{liii} "Although there was no clear turning point, the NATO summit in Washington on April 23-25, 1999 – organized originally to celebrate the alliance's fiftieth anniversary – may represent the best dividing line between winning and losing the war. Before that time, the vast majority of Kosovar Albanians were forced from their homes. Despite an intensification of the air campaign, NATO remained powerless to prevent atrocities on the ground or to establish a public perception that it was truly committed to winning the war. But the summit revealed an alliance unified in its conviction that the war against Serbia must be won. War planning became more systematic, and further increases in NATO's air armada were authorized. The alliance steeled itself sufficiently that even the accidental bombing of the Chinese embassy by a U.S. B-2 bomber did not seriously threaten continuation of the war effort. Perhaps most significantly, on April 25 Russian president Boris Yeltsin called Bill Clinton, resuming U.S.-Russian ties that had been effectively frozen when the war began. Yeltsin, though still upset, committed to do what he could to end the war, setting in motion a negotiating process that would ultimately put a 360-degree diplomatic squeeze on Milosevic." Daaler and O'Hanlon, 3-4. At the summit, NATO leaders laid out five demands of Milosevic that sounded very much like new NATO Policy Objectives: Ensure a verifiable stop to all military action and the immediate ending of violence and repression in Kosovo; withdraw from Kosovo military police and paramilitary forces; Agree to the stationing in Kosovo of an international military presence; Agree to the unconditional and safe return of all refugees and displaced persons, and unhindered access to them by humanitarian aid organizations; and provide credible assurance of his willingness to work for the establishment of a political framework agreement based on the Rambouillet accords. Daaler and O'Hanlon, 262.

^{liv} Lambeth, xix.

^{lv} Lambeth, 187.

^{lvi} Lambeth, 192.

^{lvii} Lambeth, 36-37.

^{lviii} Lambeth, 184-194, 201.

^{lix} Lambeth, 231-232.

^{lx} Clark's call for 2000 targets became known as "T2K". Lambeth, 199-200.

^{lxi} Clark responded to allegations that he micromanaged the targeting process by saying that he had to work the details in an effort to generate the attack effectiveness against the fielded forces that he knew was needed. Lambeth, 190. Nardelli, 113.

^{lxii} Nardelli, 48.

^{lxiii} Lambeth, 36-37.

^{lxiv} It appears that airpower had little success attacking fielded forces in Kosovo. The actual numbers of soldiers, tanks, artillery pieces, and mortars destroyed is an academic argument because operation in the KEZ appears to have had little impact on Milosevic. Lambeth, 135.

^{lxv} Lambeth, 40-41.

^{lxvi} Mark Clodfelter defines positive objectives as those that can only be accomplished through military force and negative objectives as those that can be achieved only by restraining military power. Negative objectives restrict the employment of airpower. See Mark Clodfelter, The Limits of Airpower: The American Bombing of North Vietnam, (New York: The Free Press 1989), xi, 4. Avoiding aircraft losses, minimizing collateral damage, and maintaining alliance cohesion were negative objectives that inhibited the application of operational fires.

^{lxvii} Current joint doctrine does not mandate a JTCB and authorizes the JFC to delegate JTCB responsibility to a component commander. Joint Pub 3-0, III-28. For an argument to put the JTCB at the JFACC level see Michael R. Moeller, The Sum of Their Fears: The Relationship between the Joint Targeting Coordination Board and the Joint Force Commander, (Maxwell AFB AL: Air University Press August 1995).